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Productivity, livelihood and risk in large-scale land acquisition and contract farming

Developing criteria to assess value sharing in foreign private investments in agriculture

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ABSTRACT OF THESIS

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Recent reports on "land and water grabs" in low-income countries gained attention in the international development community as these forms of investments in agricultural land often cause human rights violations and negative environmental impacts in host countries. This thesis analyses two business models in agriculture that have recently been popular among investors: large-scale land acquisition (LSLA) and contract farming (CF).

The objective is to assess attributes of both business models and to elaborate incentives for fair value sharing between investors and smallholding farmers in food value chains. A framework is developed to determine the responsiveness of LSLA and CF to value sharing indicators. It is expected that investment strategies, that a) consider farm size as a determinant of productivity, b) value livelihood security in host countries and c) incorporate a multifaceted risk calculation, are most gainful for investors and host country economies.

A key outcome is that contract farming offers an alternative to large-scale land acquisition in some regards. The analysis of farm size productivity and risk distribution reveals that the integration of smallholding farmers in the supply chain offers attractive opportunities for agribusiness investors. Moreover, contract farming creates an enabling environment for human and economic development in host countries.

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Statement of originality

I hereby declare that this dissertation

has been composed by me and is based on my own work.

Table of contents

List of tables and figures

Acronyms

CF	Contract farming
FAO	Food and Agriculture Organization of the United Nations
FDI	Foreign Direct Investment
IAASTD	International Assessment of Agricultural Knowledge, Science and Technology for Development
IFAD	International Fund for Agricultural Development
IFPRI	International Institute for Environment and Development
IIED	International Institute for Environment and Development
LSLA	Large-scale land acquisition
NGO	Non governmental organisation
R&D	Research and development
TNC	Transnational corporation
UNCTAD	United Nations Conference for Trade and Development

Introduction

Since 2008, the world has repeatedly experienced dramatic increases in prices for staple foods like wheat and rice. The response of food suppliers followed promptly: a surge in demand for agricultural land. Investors are transnational agribusiness companies and governments that aim at securing their food and energy value chains in times of population growth, changing diets and climate change. To achieve this, they predominantly target low-income countries with fertile and low-priced land, unclear property rights and good export conditions to reach international markets.

The Food and Agriculture Organization of the United Nations (FAO) assesses that agricultural investments are "one of the most important and effective strategies" to reduce poverty in low-income countries (FAO 2012a, 5). In light of climate change and a growing population it is undisputed that investments in agricultural productivity will benefit most of these agricultural economies. Higher yields and improved market access have the potential to generate economic growth, human development and increase food security. However, the question is whether recent large-scale land acquisitions bring enough benefit to lead the way forward.

From a political economy perspective, the investment strategy of transnational corporations to acquire agricultural land and set up their own large-scale plantations seems questionable. International institutions report severe human rights violations and negative environmental impacts in host countries due to "land and water grabs" by international investors (Anseeuw et al. 2012a; Borras and Franco 2010; Cotula et al. 2009; de Schutter 2011; Grain 2012). Moreover, with regard to threatening food insecurity, there is a need to assess whether foreign plantations are able to close the "yield gap" in low-income countries effectively. The World Bank assesses that in these

countries, natural capital contributes more than one quarter to total wealth – with 56 per cent solely coming from cropland (The World Bank 2012; FAO 2012a). Under the impression that transnational corporations take their commodities out to the most profitable market places, host country economies may be left behind with exploited resources and no gains at a society level. In this thesis it is argued that investors depend on the commitment of smallholder communities in host countries in order to achieve maximal benefits.

An examination of promising and unfavourable attributes of investment strategies can contribute to shape corporate profit seeking and economic development mutually gainful. Recent global developments gave the occasion to think over business models. Moreover, as the United Nations Conference on Trade and Development assesses, transnational corporations are currently "holding record levels of cash" and this "cash overhang" has the potential to translate in sharply rising foreign investment in agriculture and other sectors (UNCTAD 2012, xi). The objective, therefore, is to elaborate incentives for fair value sharing between investors and smallholding farmers in agricultural supply chains.

To discuss a range of key attributes of private investment in agriculture, practices in **large-scale land acquisition** (LSLA hereafter) are contrasted with practices in **contract farming** (CF hereafter) – a smallholder inclusive business model of agricultural investment. The investment strategy in LSLA is to set up own plantations in order to exert control over sourcing. In CF, it is to contract with smallholders in order to build flexibility in sourcing. As UNCTAD aptly puts it: "the choice between ownership and partnership is analogous to a 'make or buy' decision" (2011, 143). Three criteria are chosen to assess the responsiveness of LSLA and CF to fair value sharing: **productivity, livelihood and risk**. It is expected that investment strategies, that a) consider farm size as a determinant of productivity, b) value livelihood security in host

countries and c) incorporate a multifaceted risk calculation, are most gainful financially (for corporations) and economically (for host country economies).

This thesis is structured as follows: Chapter I provides insights into the state of knowledge on productivity, livelihood and risk in agriculture and presents three research questions. Chapter II provides a context to agricultural investment and compares key attributes of LSLA and CF. In chapter III the macro-economic performance of LSLA and CF in value sharing is appraised, using the criteria productivity, livelihood and risk. Chapter IV concludes the thesis by considering the questions: Which business model does add more value? What are the incentives for fair value sharing between investors and smallholders? And does CF offer a potential to replace LSLA?

1 Developing criteria to appraise LSLA and CF

To set the stage for the analysis of value sharing in large-scale land acquisition and contract farming, a research framework is developed. Before elaborating on the method and research design of this study, a review of the evolution of agricultural investments and recent research is provided. It is argued that a comprehensive assessment of political, social, environmental and corporate interests can contribute to reveal interdependencies in investment projects: positive and negative aspects, short-term and long-term implications, and stakeholder-specific consequences.

1.1 State of research

To build comprehensive evidence on agricultural investments scientists have focussed on the collection of case studies. A systematic diversification of knowledge is required because, due to the recency of investment in agricultural production, statistical data is little. To assess value sharing in this thesis, thus, relies on fragmented experiences from different regions, social settings, environmental conditions, crops, policies and investment strategies.

Historically, it is established that after the "retreat of plantation economy after World War II and decolonialisation", the World Bank and development agencies facilitated a restructuring to create "dynamic partnerships" between agribusiness companies and farms during the 1980s (Vermeulen and Cotula 2010, 39). Transnational corporations created an "internalized system of affiliates in host countries owned and managed by the parent firm" (UNCTAD 2011, 124). Since the 2000s, two business models find the attention of agribusiness companies: The concept of land-based investments, which is LSLA by investors who seek direct control over primary agricultural production. The consequence is an increase in plantation farming. The other concept focuses on the

development of “inclusive value chains”, the idea being to include (smallholder) farmers in value chains to diversify sourcing. This process brings development to rural areas in targeted countries and reduces value chain risk for agribusiness companies. Business models that promote inclusive value chains have much in common with the investment strategies of the 1980s (ibid., 41). The most practiced model is contract farming (CF), others include lease and management contracts, sharecropping and joint ventures.

Primary data and pooled data are provided by NGOs such as Oxfam, the Oakland Institute, GRAIN and IIED. Accordingly, UNCTAD assesses that there are "no recent systematic studies of TNC [transnational corporation] participation in agricultural production in developing countries" (2009, 95). The Land Matrix provides a comprehensive, even though incomplete, data collection on the prevalence of LSLA. The platform is an international partnership[1] established to build evidence on LSLA. Other sources focus on the social and environmental impact of LSLA, for instance the extent of dispossession and displacement, the declaration of land under informal tenure rights as vacant or marginal, restricted access to water for neighbouring communities and increasing food insecurity due to the export of produced commodities (e.g. Anseeuw et al. 2012a; Anseeuw et al. 2012b; The Oakland Institute 2011; McMichael 2012; Vorley et al. 2012). Barrett et al. (2010) and Wegner (2012) provide studies for a variety of CF and other inclusive business schemes. International institutions such as FAO, IIED, IFPRI, IFAD, UNCTAD and the World Bank concentrate on development and environmental impacts (e.g. Cotula et al. 2009; FAO 2012a; Deininger and Byerlee 2011; UNCTAD 2009; Vorley et al. 2009). In the recent years, the FAO together with other international stakeholders elaborated guidelines for responsible investments

[1] The Land Matrix is an international collaboration between the Centre for Development and Environment (CDE) at the University of Bern, the Centre de coopération Internationale en Recherche Agronomique pour le Développement (CIRAD), the German Institute of Global and Area Studies (GIGA), the German Agency for International Cooperation (GIZ) and the International Land Coalition (ILC)

together with academia, governments and civil society. Accordingly, guidelines for governments and corporations are the *Voluntary guidelines on the responsible governance of tenure of land, fisheries and forests in the context of national food security* (VGGT; by the FAO); the *Principles for responsible agricultural investment that respects rights, livelihoods and* resources (PRAI; by FAO, IFAD, UNCTAD and the World Bank); and the *Voluntary guidelines to support the progressive realization of the right to adequate food in the context of national food security* (by FAO) (FAO 2012a, Rudloff 2012).

Recent academic discussion suggests two ways to shape land-based investments more responsible: a) Investors commit themselves to codes of conducts or policy frameworks like the ones mentioned above, or b) investors shift their strategy towards including small-scale farming in their supply chains (thereby paying respect to local living conditions). While a discourse on the usefulness of the first method is under way (e.g. Borras and Franco 2010), the feasibility of the second method is largely unexplored. Authors like Cochet and Merlet (2011), Cotula et al. (2009), the FAO (2012a), Robertson and Pinstrup-Anderson (2010) and Rudloff (2012) acknowledge that inclusive business models, such as CF, may be more smallholder-friendly and more profitable than LSLA. However, approaches to appraise the sustainability, value addition or mere profitability of LSLA and CF are scarce.

One reason for disregarding comparative appraisals may be the difficulty to compare LSLA that excludes smallholders and CF that has smallholder inclusion at its very centre. The United Nations Conference on Trade and Development recognises the missing link and featured "transnational corporations, agricultural production and development" as a focus in its 2009 World Investment Report (UNCTAD 2009). It introduces a number of issues that qualify as criteria to compare LSLA and CF, for example supply chain management, employment, food security and foreign market access. Vermeulen and Cotula (2010) state that inclusiveness in investments is a critical

attribute to add value on a society level. To compare value sharing in investment models they suggest an operational framework that assesses the distribution of ownership, voice, risk and reward. The approaches of UNCTAD and Vermeulen and Cotula serve as a basis for the development of a research framework in the following section.

1.2 Research method

As LSLA and CF are recent phenomena, the purpose of this thesis is explorative. The scope is at analysing the available data on agricultural investments in order to explore the links between LSLA and CF. A framework for value sharing in LSLA and CF is elaborated from existing analyses on agricultural investments. Three dimensions of value sharing in supply chains guide the research: productivity, livelihood and risk.

To assess the distribution of value in LSLA and CF, typologies are developed for each dimension. The assessment bases on the qualitative analysis of existing data and comparative and historical research (Babbie 2010). The analysis consists of a) the review of concepts on livelihood, agricultural productivity and risk, and b) a content analysis of observations and case studies that are published in journals, UN reports and NGO reports. The research method is unobtrusive (Babbie 2010, 359) because research does not interfere in the processes of agricultural investments.

This thesis draws on the analysis of documents. Even though most documents relate to agricultural economics, rural development or the environmental impact of agriculture, the viewpoint in this thesis is unique. Assumptions that are deduced from other contexts' resources are potentially inaccurate. In the analysis if livelihood, for example, it must be considered that livelihood strategies available to smallholders are regional specific and highly flexible to changing circumstances. A primary data collection

potentially offered a more context-bound data set. To account for this methodological problem, assumptions are verified by various academic sources. Quantitative data is included where possible and appropriate.

Another methodological problem is that of bias. Due to the secrecy of LSLA contracts, comprehensive analyses of macro-economic benefits from LSLA do rarely exist. NGOs in this field mainly take the perspective of smallholder communities that are affected by LSLA or hold supply contracts with agribusiness firms. Reports and data, for example from the Oakland Institute and GRAIN, are expected to contain some bias.

This thesis aims at contributing to the body of knowledge in the field of agricultural investment. To tackle the introduced problems and enhance validity, results in this thesis are crosschecked from various perspectives. Assumptions are adopted if more sources point to the same result (Babbie 2010, 356).

1.3 A framework to assess value sharing

A framework to assess value sharing in LSLA and CF sets the stage for a discussion on the benefits and drawbacks of investment strategies. The aim is to bring together corporate and society level perspectives of gainful investments. **The hypothesis is that fair value sharing brings more benefits to each player** because profit depends on the "interdependence of corporate success and social welfare" (Ashley 2009).

Fair value sharing in agricultural investments, accordingly, is understood as the balanced distribution of gains and costs between stakeholders. The 2009 World Investment Report (UNCTAD 2009) and Vermeulen and Cotula (2010) contribute the following attributes to assess value sharing in agricultural investments:

- financing and investment
- technology and innovation

- employment and skills
- standards and supply chain management
- foreign-market access and exports
- competition and market power
- impact on the environment
- social effects and political implications
- implications for food security
- distribution of ownership
- distribution of voice
- distribution of risk
- distribution of reward

To give evidence for the hypothesis, three attributes are elaborated:

- productivity
- livelihood
- risk

In the following analysis these attributes serve as dimensions of value sharing in LSLA and CF. They are used to illustrate the need to create mutually gainful partnerships in order to increase corporate profit and prevent cost in investment projects. Three research questions guide the appraisal of LSLA and CF.

1.3.1 Productivity: Do plantations achieve higher yields?

Critics of LSLA point to the fact that small-scale farming generally achieves higher outputs than plantations (Eastwood et al. 2010; FAO 2012a; McIntyre et al. 2009). Even though quantified evidence to back up this notion is rarely provided, productivity, here, is assumed to be a major factor for profitability.

Crop productivity varies according to farm size. Observers report that LSLA, i.e. plantations, are more profitable for scale economies such as staple crops and CF, i.e. small-scale farming, is more profitable for highly perishable and labour intensive crops (UNCTAD 2009; Vermeulen and Cotula 2010). This indicates that investors choose their business model according to the growth conditions for desired crops. A productivity analysis is conducted to verify whether farm size is a critical factor in corporate investment strategies.

To assess the role of productivity the following questions need attention:

- What are the dimensions of productivity?
- Is it the crop preference that drives the decision over LSLA or CF?
- Can one business model serve as most productive for all crops?
- Does productivity growth in LSLA and CF serve as a common ground for mutually gainful partnerships?

Two typologies are developed to assess the responsiveness of LSLA and CF to fair value sharing in productivity. One assesses productivity characteristics of LSLA and CF, the other assesses sustainable production under LSLA and CF. It is assumed that an assessment of sustainability provides indication for determinants of fairness.

1.3.2 Livelihood: How do local livelihoods matter for project success?

Livelihood serves as an aggregate measure for local wellbeing in host countries. Livelihood security and the amount and quality of livelihood strategies indicate the wellbeing in the population. It is argued that investors have a strong rationale to consider local livelihoods of communities and farmers. The hypothesis is that LSLA investors have an interest in building local reputation and acceptance for plantations and that, in CF, well-off farmers are better partners and more reliable suppliers.

Investing in local livelihood security, therefore, increases the long-term profitability of private investment projects.

The following questions lead the assessment:

- What are indicators for smallholder livelihood?
- How are local livelihoods considered in LSLA and CF?
- Why is it important/profitable for investors to consider local livelihoods?

The livelihood framework by Scoones (1998) is utilised to develop dimensions and indicators of livelihood in the context of agricultural investment. A typology gives evidence on how recently observed corporate investment strategies consider livelihood. On this basis, the relevance of single livelihood attributes for investors in LSLA and CF is discussed.

1.3.3 Risk: Which business model is less risky for investors and smallholders?

The business as usual in global value chains has been an outsourcing of production by agribusiness companies because most risk concentrates in farming. To avoid high transaction and opportunity cost agribusinesses focussed their market power in the processing and distribution of products (Vermeulen and Cotula 2010). Therefore, it is argued that risk is a major determinant in the choice of investment strategy. It is hypothesised that a) LSLA investors face less risk because investors have the power to exert direct control over input supplies, production and marketing, and that b) inclusive business models, i.e. CF, are more pursuable from a smallholder perspective because they offer the potential to share risk with investors.

To assess which business model is less risky for whom the following questions are attended:

- What are risks that investors and host countries face from the perspective of global markets, host country societies and the environment?
- How is risk distributed between investors and smallholders in LSLA and CF?
- Which business model is more preferable from a political economy perspective?

To approach the analysis, a set of risk indicators is identified that affect smallholders' and investors' decisions in agricultural investment projects. To capture a comprehensive impression, sources from a development, an environmental and an economics background are utilised. A typology is developed to indicate the distribution of risk between investors and smallholders in LSLA and CF. On this basis, preferable attributes of each business model are discussed.

2 Key attributes of agricultural investment in low-income countries

The FAO provides systematic insights to the sources of investment in agriculture in its report "The state of food and agriculture" (FAO 2012a). Sources of investment in world wide agricultural activities are depicted in figure 1. They cluster in four categories:

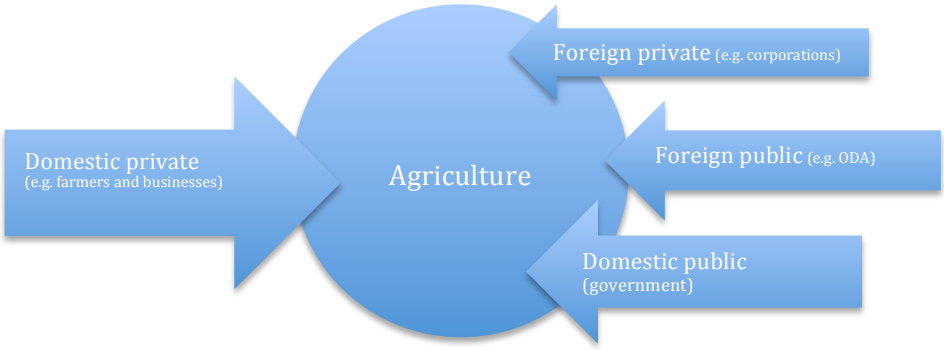

Figure 1: **Sources of investment in agriculture according to the UN Food and Agricultural Organisation (FAO 2012a, 7)**

Dominating is *domestic private investment*, which includes farmers' own contributions, and domestic businesses that invest in production (e.g. national retailers). *Domestic public investment* (e.g. government subsidies) is the second largest source of capital. *Foreign public investment* refers to development aid and the Official Development Assistance (ODA). Public interest recently focuses on the forth group: *foreign private investors*. Even though foreign private investment in agriculture holds a minor share on a global scale, it can make a contribution globally and locally (FAO 2012b): Transnational corporations in the food sector are envisioned to have a high capacity to closing the "yield gap" [2], that is to produce enough food to feed the nine billion world

[2] The "yield gap" concept is viewed controversially among academics. At the heart of the discussion is disagreement of whether a 9 billion population needs more food (availability) or only better distribution

population by 2050. At a local scale, particularly in low-income countries, private investors can contribute to higher farm efficiency and higher profits from farming. UNCTAD (2009) identifies potential benefits from the facilitation of access to global markets and value addition of products, financial resource development for reinvestment in the local economy, infrastructure development that benefits farmers and communities, employment creation and technology transfer.

Large-scale land acquisition and contract farming are representatives of foreign private investments. The two business models are the ones that received most public attention during the last decade (UNCTAD 2009, 111). The interest is driven by the notion of an on-going change in the demand for food products and renewable energy sourcing, in supply chain governance and in agricultural policies (Vermeulen and Cotula 2010, 19). Distinct trends are the rising demand for food due to population growth, changing diets in transition economies, recent export restrictions and declining reserves as well as the increasing demand for biofuels (FAO 2012b). Another development is the increasing demand for food safety and quality standards of retailers, respectively supermarket chains, and consumers. To meet these standards, agribusiness companies started a "transformation of export-oriented producers to producer-exporters" (Trienekens 2011, 71). Accordingly, Trienekens assesses that the response to the new challenges manifests in two investment strategies:

1) Investors exert full control over the production to reduce the transaction cost of monitoring the compliance to food standards. The business model is (foreign) direct investment in agricultural land; an equity investment that is called large-scale land acquisition (LSLA) in this study.

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and reduction of food waste (access) of existing food. McMichael (2010) offers a starting point for a more in-depth discussion.

2) Investors increase collaboration and invest in producers. This is a non-equity and smallholder inclusive investment strategy. The business model that is under scrutiny here is contract farming (CF).

UNCTAD reports that: "The choice between internalization and externalization [of value chain activities] is typically based on the relative costs and benefits, the associated risks, and the feasibility of each option" (2011, 124). To gain an understanding of the investment process in global value chains, figure 2 (adapted of UNCTAD 2009, 107) provides an overview.

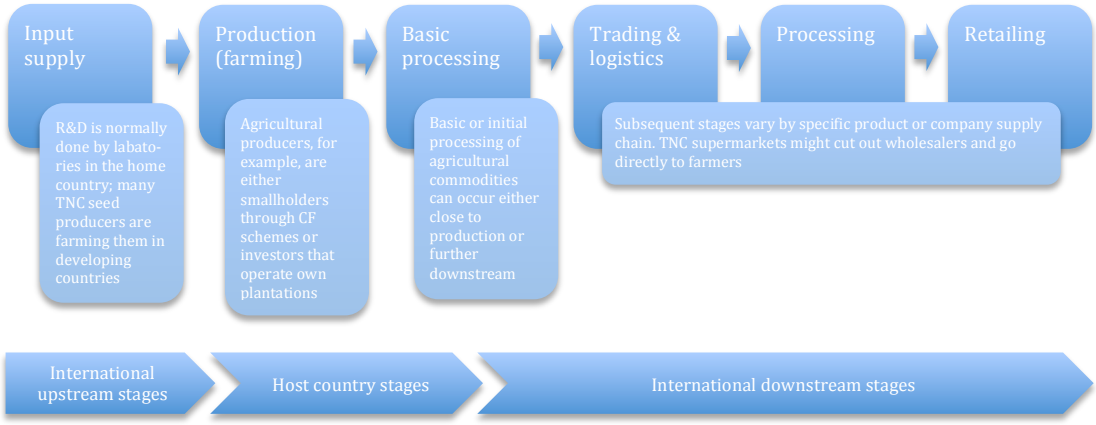

Figure 2: **Investment process in global value chains according to the UN Commission on Trade and Development (UNCTAD 2009, 107)**

In both business models investors particularly target the production of crops and basic processing. For production, and in some cases basic processing, host countries with preferable growth conditions are selected. Upstream activities in the value chain, such as research and development (R&D), and the supply of seeds and chemicals, take place internationally. So do the downstream activities of trading, final processing and retailing. The two stakeholders who are under scrutiny here are smallholding farmers, on the one hand, and agribusiness or external investors who operate own farms, on the other hand.

In the following, key characteristics of both business models, LSLA and CF, are assessed and contrasted. The chapter is concluded by with summary of key attributes in table 1.

2.1 Large-Scale Land Acquisition (LSLA)

Large-scale land acquisition (LSLA), as it is viewed here, is a form of foreign direct investment (FDI) in primary agriculture in developing countries[3]. UNCTAD describes LSLA as an equity investment in which foreign investors lease or purchase agricultural land that constitutes an asset in itself. This kind of land-based investment is observed since the beginning of the 2000s (Cotula et al. 2009); with a notable increase in interest after the world food price crisis in 2007/2008 (FAO 2012b), when supplying countries restricted the export of staple crops, biofuel policies sparked, and speculation on future food markets appeared.

Two characteristics of this business model are distinct from traditional investment in agriculture: first, the desire to establish own agricultural production, and second, the targeting of low-income countries to secure direct access to fertile land and water. Under the paradigm of full commercialisation, investors neglect local farming activities, the cultural value of land, as well as the inclusion or development of local capacity (FAO 2012b, 3). Nevertheless, many developing countries welcome FDI because governments expect infrastructure development, technology transfer, and rural employment. To achieve economic growth they support investors with financial incentives, such as attractive land prices and tax exemptions (The Oakland Institute

[3] Investors that acquire agricultural land at a large-scale are not necessarily foreigners, though this is the focus in this thesis. Particularly in transition countries with own supermarket chains etc., domestic investors are increasingly common. China, South Africa, Brazil and some South East Asian countries belong to this group. Moreover, due to little recent data, knowledge is incomplete on the direction of commodity trade to domestic or foreign markets. See Borras and Franco 2012, 'Global Land Grabbing and Trajectories of Agrarian Change', for an introduction to character, direction and orientation of land acquisition.

2011). Critics refer to LSLA as "land and water grabbing" that have caused "displacement, dispossession and disenfranchisement" of local smallholder communities (Scoones in Cochrane 2011).

2.1.1 Prevalence, investors and host countries

LSLA is a recent phenomenon. Statistics on investors, targeted countries, cultivated commodities and trade destinations in LSLA are rare at this point in time. Data is mainly inferred from case studies (e.g. Anseeuw et al. 2012b; von Braun and Meinzen-Dick 2009; Cotula et al. 2009; FAO 2012b, IFAD 2009; UNCTAD 2009) and databases of the non-governmental organisation GRAIN and the international partnership The Land Matrix.

The FAO presents figures on foreign direct investment (FDI) in agriculture for 44 countries: "FDI to these countries more than doubled between 2005-06 and 2007-08" (FAO 2012b, 4). This data set, however, only incorporates total FDI in value chain activities, including processing and packaging. It disregards investments by new investors like banks, pension funds, hedge funds and private equity funds. FDI statistics thus have limited power to give evidence of LSLA. To isolate investments in farming from other investments, isolated statistics would be required.

Data on the prevalence of LSLA was first collected by GRAIN who based their findings on media reports. The NGO assessed that between 2006 and beginning 2012 more than 400 large-scale land deals were signed (GRAIN 2012). The Land Matrix (2013), an international partnership that was established in order to systematically verify reports on LSLA, confirms this trend. To date (August 2013) it reports 802 large-scale land

deals (>200ha) that comprise of 34 million hectare land[4]. This equals the size of 47.2 million football fields or 3.7 times the size of Portugal.

The investors are companies that are either involved in agribusiness or are external to agricultural value chains. Private equity investors and sovereign wealth funds (UNCTAD 2009) become involved to diversify their portfolios or speculate on future food markets. Most investors come from South East Asia, Eastern Asia and Northern Europe. The top home countries of investors are: the USA (with a lease/purchase of 8 million hectare land), Malaysia (3.6), United Arab Emirates (2.9), UK (2.1), India (1.8) and China (1.6)[5]. (The Land Matrix 2013) Some of these countries aim at securing their own food and energy security due to high population growth or insufficient agricultural productivity (UNCTAD 2009, 123). Others are home to big transnational companies that supply global markets.

Host countries to land investments primarily are developing or transition economies in South East Asia, Eastern Africa and Western Africa. The top targets of investors are South Sudan (4.1 million hectare), Papua New Guinea (3.9), Indonesia (2.9) and DR Congo (2.7). Other high-ranking targets are Mozambique, Liberia, Ethiopia, Sierra Leone and Madagascar. (The Land Matrix 2013) Something that all these countries have in common is that they face high levels of food insecurity. The 2012 FAO hunger map shows that, with exemption of Indonesia, more than 25 per cent of the populations in all these host countries to LSLA suffer from undernourishment (FAO 2012c; data not complete for DRC and Papua New Guinea).

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[4] Contracts for up to 50 per cent of these deals were concluded after the world food price crisis in 2007. It may be noted that details are missing for many deals and deviation is generally high. Moreover, some investors do partner with regional companies who then acquire the land; this practice obscures home country statistics.

[5] It is interesting to note some comparative data: China gained attention for its land rush recently: it ranks 6th in terms of acquired size and concluded 71 deals in 25 countries. The dissemination is comparable to the UK, which ranks top in Europe because its companies concluded 78 deals in 26 countries. German companies concluded 12 deals in 9 countries, Germany ranks lowest in Western Europe together with France and Belgium.

2.1.2 Rationale for investors

The rationale for investors is either to ensure food security in their home countries or to respond to volatile commodity prices (FAO 2012b, Vermeulen and Cotula 2010). In consequence, some agribusiness companies started the vertical integration of their value chain. The involvement in agricultural production allows them to assert full control over supplies. This pays back in a time where supermarkets gain increasing market control and demand for high quality and safety standards, assert packaging requirements and require consistent supply of their wholesaler (UNCTAD 2009, 109). Moreover, Vermeulen and Cotula suggest that the production of scale economies like grains offers attractive returns if agribusinesses apply technological innovations and knowledge on modern farm management (2010, 21). Long-term benefits come from the acquisition of fertile land itself. Land is an asset and offers "uncorrelated returns with the equities market and strong hedge against inflation" (FAO 2012b, 3).

2.1.3 Process of land acquisition

When land is nationalised or managed centrally, investors contract with host country governments straight away. Government authorities then offer the investor land that is "underutilised" or "idle" (Borras et al. 2009). This declaration of land, however, has caused widespread discussion. The FAO objects that the land offered to investors is characterised by high fertility and access to water resources, as well as close proximity to transportation hubs (FAO 2012b). Cotula et al. (2009) assess that many areas have been under customary tenure before investors came in. In consequence, dispossession and displacement of local communities are frequently reported phenomena in relation with LSLA. This issue is worth noting insofar as formal land registration did not exist prior to the acquisition in many cases (The Oakland Institute 2011). Related to this problem, a critical point is the lacking consultation of local communities in decision-making. Even though the UN Declaration on the Rights of Indigenous People clearly

acknowledges the involvement of locals, they are usually not consulted in the negotiation process (Cotula et al. 2009; de Schutter 2011).

The labour force on the highly mechanised plantations consists of partly low-skilled local staff and high-skilled national/international staff. The marketing of commodities is directed either to local markets or to the home countries of investors or to international markets where highest profits are expected.

2.2 Contract Farming (CF)

Contract farming (CF) is a form of non-equity investment of agribusiness companies (UNCTAD 2011). CF is characterised by its inclusiveness for smallholder farming. While investors have ownership in production, they do not hold shares in the land or local businesses. The United Nations Development Programme (UNDP) defines inclusive business as "business models that create value by providing products and services to or sourcing from the poor" (Ashley 2009). Therefore, inclusive businesses are strongly linked to poverty reduction in developing countries (FAO 2012a). For investors the incentive is to go beyond the conventional spot market purchase of commodities and diversify their sourcing opportunities. They gain from the predictability of prices and the flexibility in sourcing.

2.2.1 Prevalence, investors and host countries

Data on the prevalence and distribution of CF (i.e. non-foreign direct investment) is not collected on macroeconomic level (UNCTAD 2011; Oya 2012). Numerous case studies have been conducted to fill the gap. Recent reports of UNCTAD (2009; 2011) suggest that CF is used in over 110 low-income countries. The prevalence and contribution of CF to the economy is significant in some cases: 50 per cent of tea and 40 per cent of rice

in Vietnam as well as 90 per cent of cotton in Brazil are derived from CF schemes (ibid.). Other countries with high shares of CF are Kenya, Zambia and Mozambique. Investors are foreign agribusiness companies as well as parastatal and local private investors (Vermeulen and Cotula 2010). The Swiss food manufacturer Nestlé, for example, in the year 2008, contracted with more than 600,000 farmers in over 80 countries that supplied agricultural commodities, reports UNCTAD (2011, 126). Systematic evidence on who the investors are and where they are from is not specified in the literature.

Investors target single farmers or farmer associations in geographically preferable regions. Criteria are the "biophysical crop production capacity", such as soil quality and water access, and the "physical and institutional infrastructure", such as roads, ports, irrigation, property rights and investment policies (Barrett et al. 2010). Alongside with the location, case study analysis reveals that some groups of smallholders are advantaged in contracting. There is evidence that contract partners tend to be 1) the wealthiest two to ten per cent of smallholders, 2) the ones with formal tenure rights, and 3) farmers with bigger land holdings (Vorley et al. 2010, 6; Vermeulen and Cotula 2010, 47; Barrett et al. 2010, 25).

2.2.2 Rationale for investors

Transnational agribusiness companies choose to source their products from smallholders directly because, first, commodity prices are increasingly volatile and CF offers stable supplies (through flexible sourcing) at predicable cost (fixed price regimes). And second, because it is foreseeable that host countries may prefer non-equity investments and restrict foreign land acquisition. The reason is that LSLA by foreigners is inevitably linked to loosing natural capital and related gains (UNCTAD 2011).

2.2.3 Process of contracting with smallholders

Investors choose preferable locations and partners according. Promising smallholders are offered contracts. During the season, smallholders and investors decide whether to comply with the contract, i.e. not to side-sell the produce, or not to drop the farmer. After the seasons it is decided whether to maintain the partnership for the next season. (Barrett et al. 2010)

In the production process investors usually contribute by providing fertiliser, pesticides, seeds as well as technical advice, credit and logistics, and assets that are key to production and marketing (Vermeulen and Cotula 2010). The price for these services is either charged upon supply or charged against the purchase price of the commodity. To control smallholder production, agribusiness companies use four levers: The specification of quality requirements and of input intensification, the introduction of restrictions on side selling, and the demand for social responsibility (CSR) requirements (UNCTAD 2011). The enforcement of these levers depends on the negotiation power of investors, which generally is great because investors offer smallholders a unique link to international food markets.

Table 1: **Summary: key attributes of large-scale land acquisition and contract farming**

Attributes	Large-scale land acquisition	Contract farming
Strategy	Purchase or lease of land in order to establish large-scale plantations. Direct control over production as means to secure supply.	Extending pool of producers in order to establish flexible sourcing opportunities. Support of smallholder farming as means to secure supply.
Prevalence	755 deals (over 200 hectare) involving almost 33 million hectare agricultural land globally.	No systematic evidence
Host countries	Primarily developing or transition economies in South East Asia, Eastern Africa and Western Africa	Evidence for bulk share in production of some (export) crops in Vietnam, Brazil, Kenya, Zambia and Mozambique

Investors / home countries	Agribusiness companies, private equity investors, sovereign wealth funds etc. from USA, Malaysia, Arab Emirates, UK, India and numerous other countries	Agribusiness companies; no systematic evidence on their home countries
Rationale	To secure food supplies to home countries with rising population and low potential for agricultural production; response to volatile prices for agricultural commodities on spot markets.	To secure food supplies to home countries with rising population and low potential for agricultural production; response to volatile prices for agricultural commodities on spot markets.
Process	Long-term lease or purchase contract between investors and (usually) governments of host countries; clearance of land from indigenous users; mostly export of cultivated crops	Seasonal or long-term contract between investor, who guarantees purchase and maybe input supplies, credit…, and smallholder or farmers' association, who guarantee supply and quality/quantity

Source: Own elaboration

3 Appraising land acquisition and contract farming

The review in section II indicates that LSLA and CF follow fundamentally different investment strategies. To elaborate benefits that corporations and host countries derive from each business model, it is analysed how they share value between investors and smallholders. A systematic review of the dimensions productivity, livelihood and risk is expected to reveal common interests for adopting fair value sharing in investment projects.

3.1 Productivity

To assess productivity in LSLA and CF is a condition to discussing advantages and disadvantages of both business models. Development economists stress that increasing agricultural productivity, essentially higher farm efficiency, is critical to poverty eradication, food security and economic growth in low-income countries (Matsuyama 1992, Fuglie and Nin-Pratt 2012). For transnational corporations, on the other side, to increase productivity of acquired land translates into direct and unshared "historical" returns on investment (FAO 2012b, 3). These statements indicate that both stakeholders have a vital interest in increasing productivity. It can be argued that, in consequence, productivity growth serves as a common ground for mutually gainful partnerships.

Two aspects of productivity seem to be of critical importance for corporate strategy planning and government policy planning:

- The choice of the appropriate farm size in order to cultivate the desired crops; or from a government perspective: the preference for the business model that suits for local growth conditions.
- The environmental and social sustainability in order to ensure the long-term availability of and access to natural resources.

To clarify the relationship between productivity, farm size and sustainable production, a conceptual approach to the term "productivity" is introduced. In a further step, indicators are developed for the assessment of productivity on small and large farms, and for sustainability in LSLA and CF. Special attention is given to the productivity of crop types according to farm size. This analysis allows for a discussion on what business model achieves higher and more sustainable productivity in host countries.

3.1.1 Concept development

Productivity is the ratio of total outputs to total inputs (Arnade 1998; Fuglie and Nin-Pratt 2012). Agricultural productivity, thus, describes the ratio of a unit of yield to a unit of input, such as labour, land, material inputs or capital. Labour productivity in agriculture is the most utilised measure because an increase in the yield-labour ratio indicates the economic advance of a country (see, for example, Fuglie and Nin-Pratt 2012, McIntyre et al. 2009). The argument is that more output per worker indicates higher efficiency and therefore translates into higher profits from one unit of output. Land productivity in agriculture indicates the ability of farmers in a country to utilize natural resources. Agricultural economists state that future productivity growth must come from increased land productivity because additional land to extend crop and livestock production areas is scarce (von Witzke 2010). This requires the ability of farmers to intensify raw material inputs through the introduction of tractors, the development of irrigation infrastructure, or the application of fertilizer and chemicals.

To assess productivity in international agricultural investments poses a challenge. It is common for productivity studies to compare countries. However, country data is not suitable to comparing the productivity of LSLA and CF. In LSLA, the agricultural practice of high-income country investors is "outsourced" to plantations in host countries. Host countries usually are low-income countries with lower agricultural efficiency. A distinction between productivity progress on single foreign plantations and progress in the whole agricultural sector is not possible with country-level data.

To account for this difficulty in measurement, the use of "farm size" as an alternative to "country" as reference point for productivity is suggested. The measure would then depict the land or labour productivity in small-scale farming and in large-scale farming. So far, land productivity per farm size is rarely assessed (McIntyre et al. 2009, 164) and can only be inferred from country statistics if a correlation between farm size and income level in counties is assumed. Eastwood et al. (2010, 3330), for example, show that farmers in Sub-Saharan Africa (SSA), a low-income region, have a mean land size of 2.4 hectares. In the USA, a high-income country, the mean is 178.4 hectares. It can be inferred that the output per unit land in SSA is lower because the region is less developed. This, however, does not reflect the reality. The efficiency may be lower at small farms but there is clear evidence that the effectiveness, i.e. the output, per unit land is higher on small farms than on plantations. The IAASTD Global Report acknowledges, „small farms are often among the most productive in terms of output per unit of land and energy" (McIntyre et al. 2009, 9).

To accommodate for this shortfall in statistics, the following sections develop and discuss farm size-level indicators for the appraisal of LSLA and CF.

3.1.2 Farm-size productivity in LSLA and CF

Investors know which crops they want to plant or source (UNCTAD 2009). They aim to find a location with suitable growth conditions for specific crops. It is therefore

reasonable to assume that rationally acting agribusinesses choose the business model according to its crop capacity. To give evidence, the objective of this section is to identify and discuss indicators that determine productivity in LSLA and CF.

The following indicators are identified as critical to a productivity assessment: farm size, farming technique, farm management, labour force, input use, and up and down stream value chain linkages (McIntyre et al. 2009, FAO 2012a). The productivity attributes of LSLA and CF are depicted in figure 3. The interplay of these attributes determines the ability of LSLA plantations and CF farms to plant certain crops and pursue productivity growth.

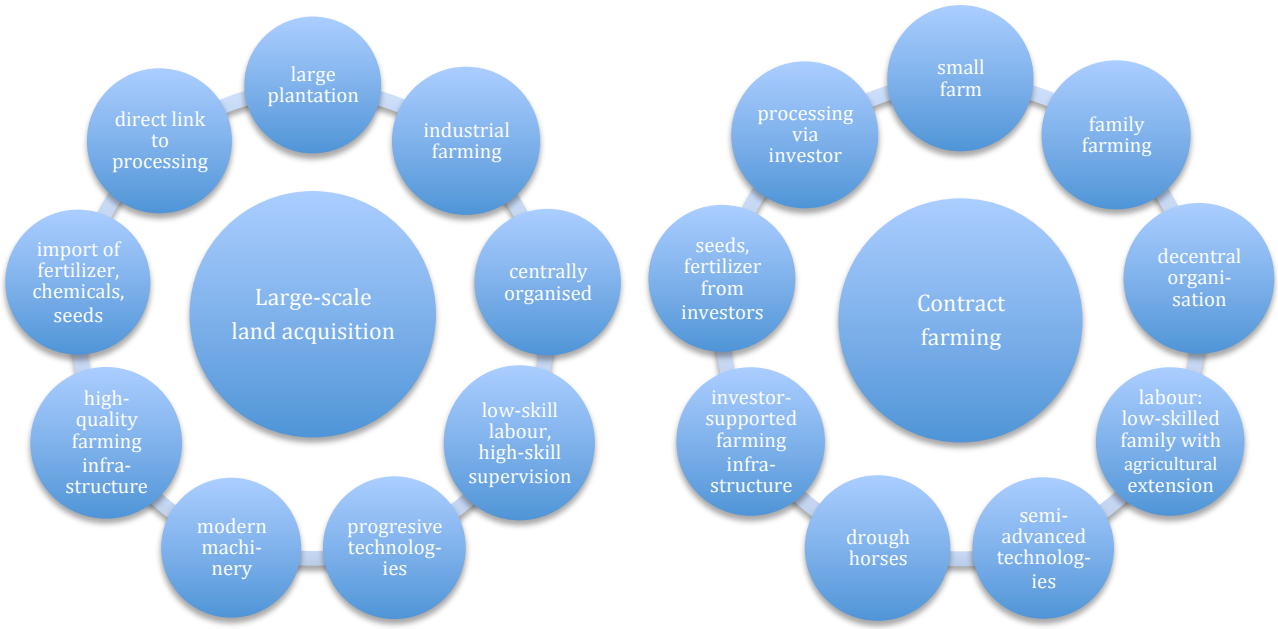

Figure 3: **Key attributes of large-scale land acquisition and contract farming (Source: own elaboration)**

From the outlined attributes it seems that some productivity – farm size ratios are critical to corporate decision-making:

- Crop productivity: Different crops require different growth conditions. To gain maximum yields, investors have to consider what crops are produced more

effective under plantation farming or small-scale farming. Depending on the crop characteristics, other requirements such as constant access water and processing facilities need attention. For example, the proximity of fresh water sources is key if investors plan to introduce more crop cycles; and crops that require quick processing need short proximity to roads and harbours.

- Labour productivity: Skills level and number of employees is a cost factor. CF operates with local smallholder farms that have more staff that costs less but requires skills training. LSLA brings in highly skilled extension and supervision staff. This personnel is costly and needs social infrastructure and heath care but costs for skills training and communication are avoided.
- Input productivity: The shipping of inputs to remote areas is costly. In LSLA, machinery and physical infrastructure (e.g. for irrigation) as well as seeds, fertilizer and chemical inputs are imported solely for plantations. In CF, according to the terms and conditions in agreements, some inputs may be imported.
- Resource productivity: Especially for investors in LSLA the productivity of soil, water and energy are important. They aim for short-term efficiency but also have to consider long-term availability. To respond to both needs, consideration to environmental degradation and balanced input intensification is necessary. In CF, responsible resource use is not a primary interest of investors. They are prepared to change suppliers if pre-agreed quantity and quality cannot be reached due to resource depletion.
- Other factors influencing productivity relate to the developing country context: infrastructure development, technological progress, political context and the social environment in the host region.

To draw a general conclusion on which business model achieves higher output with less input cost is hardly possible at a theoretical level. The ideology of cost measurement is important to consider here. From a business administration

perspective only monetary values are considered in the input calculation. Measures like the total factor productivity (TFP) consider additional indicators such as technological efficiency and environmental impact. (Fuglie and Nin-Pratt 2010, Fan and Brzeska 2010) It is assumed that advocates for the conservative measure would consider LSLA more productive. Accordingly, plantations achieve higher yields with less input. An advocate for the total factor productivity argues that for example resource degradation has to be factored in. Accounting for the value of salinisation, erosion etc. thus increases the input cost and makes LSLA less efficient.

Which business model is appropriate for what crops?

Under utilisation of these findings, the focus of the following analysis is on the farm-size productivity of crops in large-scale and small-scale farming. It is assessed what crops are produced more efficiently under LSLA and under CF. Indicators for the assessment are provided by the business model attributes depicted in figure 3 and the growth requirements of different crops.

From the literature on the foundations of agricultural economics it is understood that smallholder farms are "usually most effective" for the cultivation of all crops (Hayami 2010, 3308; McIntyre et al. 2009). One reason for the high farm productivity is that family farms have lower production costs than plantations, assess Eastwood et al. (2010). Another is that the livelihoods of entire smallholder families rely on farming. This is an incentive to dedicate considerable time and energy of all family members to on-farm activities (Hayami 2010).

However, the perception of smallholder effectiveness is challenged by recent developments in food supply chains. It seems that the production on plantations does add value, because:

a) there is a need for timely and "precisely controlled" supply of commodities to value chains (Hayami 2010, 3309). Supermarkets and retails put pressure on

the production stage because they demand for quality standards and traceability of products (Eastwood et al 2010; Vermeulen and Cotula 2010).

b) volatile prices on food global markets have lead to the desire for vertical integration in value chains (FAO 2012a, pp. 99; Evans 2011). Involvement in the production provides investors with direct control over the availability of and access to food.

It can be expected that these changes do impact on farm size productivity. The United Nations organisation UNCTAD, accordingly, reports that LSLA is particularly efficient for the cultivation of scale economies[6] and where crop production is "closely linked with the first step of processing" (2009, 112). This observation is in line with the assumption of Hayami (2010) of tight time schedules for harvesting and processing are better manageable at plantations. Moreover, investors seize the opportunity to increase profits by integrating value chain activities to their portfolio and investing in assets, particularly fertile land (FAO 2012a).

The importance of scale economies and downstream links are validated by a recent FAO assessment that finds that 83 per cent of the acquired land are dedicated to crops like maize, wheat, soft oilseeds, and feed grains for livestock; 13 per cent are used for livestock production; the rest is dedicated to permanent crops like banana cultivation (FAO 2012b). Banana production is a case in point for high processing requirements because the fruit needs to be packed, shipped and loaded on a refrigerated boat within one day after harvest (Hayami 2010). From country case studies UNCTAD assesses that LSLA plantations in developed countries concentrate on the production of cash crops

[6] Crops are scale economies if output increases while inputs remain constant, defines Hallam (1991, 157): "Returns to size is the change in output relative to costs for variations along the expansion path (cost minimizing input combinations) where the input price ratio is held constant." For a more in-depth discussion on measurement see: Hallam, A 1991, 'Economies of Size and Scale in Agriculture: An Interpretive Review of Empirical Measurement', Review of Agricultural Economics, Vol. 13.

such as fruits, vegetables, flowers and animal products. In developing countries, mainly export commodities are produced: in Central America sugar cane and fruits; in Africa staples such as rice, wheat and oil corps, sugar cane, cotton and floriculture; in South Asia rice and wheat (UNCTAD 2009, 130). However, systematic evidence on crop productivity in relation to farm size is little and incomplete. Neither the lease/purchase agreements nor national monitoring provide detailed information on how investors use their land.

With regard to small-scale farming investors seem to have a clear perception of crop productivity. Accordingly, Vermeulen and Cotula (2010, 49) summarize that CF is used mainly for "highly perishable, labour-intensive crops". Examples are the production of some vegetables and fruits, cocoa, tea, sugar, poultry and cotton, as well as the biofuel feedstock jatropha (UNCTAD 2009; Wegner 2012). For economies of scale evidence on the successful and efficient application of CF is little so far (Vermeulen and Cotula 2010). This observation is consistent if one considers that smallholder farms on average measure less than two hectares (FAO 2012a, 56). Opportunities to grow crops extensively and benefit from less input or equipment costs may be limited at this scale.

The evidence suggests that there is an overlap in crops that are produced under LSLA and CF; this is the production of crops that are perishable and need quick processing. An overlap is identified for crops such as rice, sugar cane, jarthropa, vegetables, cotton, coffee, cocoa and banana (The Land Matrix 2013; Wegener 2012; Vermeulen and Cotula 2010).

The systematic appraisal of the total farm-size productivity for LSLA and CF has to accommodate for these growth conditions and marketing requirements as well as for specific social and environmental contexts. The question is, how different attributes are weighted in a comparative analysis. For example, CF has low labour cost but a relatively large work force. LSLA, on the contrary, has higher labour cost but only few staff. These characteristics make it difficult to draw a general conclusion on labour productivity.

This is also acknowledged by Vermeulen and Cotula (2010, 22) who insist that "false dichotomies between small and large-scale should… be avoided".

3.1.3 Sustainability in LSLA and CF

Sustainability is a determinant to ensureing long-term benefit from natural and human resources. In this study, sustainability outcomes are also interrelated with fairness in value sharing. Transnational agribusiness companies that invest in developing countries are frequently criticised for neglecting sustainability in their investment strategies and exploiting local resources (FAO 2012b). Governments in host countries, thus, have a double responsibility: to ensure benefits for the population and to manage natural capital wisely in regions where large-scale plantations are established. To assess sustainability, table 2 presents a collection of factors that influence positive or negative productivity growth.

Table 2: **The availability of productivity factors to plantations and smallholder farms**

Factors that in induce productivity growth [1-5]	Factor available to		Factors used more sustainably in LSLA or CF*
	LSLA plantations*	CF smallholder farms*	
NATURAL CAPITAL & INPUT INTENSIFICATION			
Soil fertility [2 4]	yes	yes	CF
Land expansion (potential) [1 2]	maybe	maybe	--
Water nutrient content	yes	yes	CF
Labour [1 2 4]	yes	yes	CF
Irrigation [1 2]	yes	maybe	CF
Energy [1]	yes	no	--
Fertilizer use [1 4 5]	yes	maybe	CF
Pesticides use [1 2 4 5]	yes	no	CF
PROGRESS AND CONTEXT FACTORS			
Research and development [1 2 5]	yes	no	LSLA
Mechanisation [2 5]	yes	maybe	CF/LSLA
Modern crop variety use [2 5]	yes	maybe	CF/LSLA
Technology adaption [1 2 3]	yes	maybe	CF/LSLA

Breeding programmes [3]	yes	no	CF/LSLA
Infrastructure improvement [1]	yes	yes	CF/LSLA
Human capital development [1 5]	no	yes	CF
Increase in asset endowment [1]	no	yes	CF
Government policies [1 2]	yes	yes	--
Land tenure rights	yes	maybe	--
Flexible adaptability to changing environment [4]	no	yes	--
Attention to health and safety [4]	yes	no	LSLA
Market access [2]	yes	yes	CF
Credit access [2 5]	yes	maybe	CF

Sources: [1]FAO 2012; [2]McIntyre et al. 2009; [3]IAASTD 2009; [4]Foundation on Future Farming 2013; [5]Arnade 1998; *own elaboration

Which business model is more sustainable in utilising natural resources, input intensification and technology to induce productivity growth?

Sustainability in productivity factors, here, is viewed as the opportunity to increase local welfare in a socially and environmentally friendly way. Natural capital, input intensification and "progress factors" (FAO 2012a, 32) contribute to or determine productivity growth. Smallholders and plantation managers have the position to steer changes in these factors[7]. Context factors describe "higher level" indicators that impact on the ability to induce productivity growth by smallholders and plantation managers.

Soil fertility and water nutrient content are the primary drivers of land productivity. Plantations that are run by agribusiness companies utilise these resources very efficiently because they have access to factors of progress and the means to apply input intensification. Plantation managers have access to research and development and can upgrade their productivity with the introduction of irrigation infrastructure, tractors and modern crop varieties (FAO 2012a; Pretty et al. 2006). The use of fertilizer and chemicals is common at plantations to increase land productivity. However, these

[7] An in-depth appraisal of environmental impact would face a methodological problem with the comparability of different farm sizes. The question is whether environmental impacts can be equated for farm size. For example, the environmental impact of one irrigation scheme that feeds a 1000 hectare-plantation is hard to compare with the entire irrigation infrastructure for two hundred 5 hectare-farms.

means of increasing efficiency come along with severe resource degradation (Pretty et al. 2006). This leaves LSLA plantations as unsustainable in terms of input use.

In terms of social improvement, it can be well regarded as a contribution of investors that numerous progress factors "enter" the countries that host plantations. Agribusinesses hold the knowledge and technology to develop their plantations. This strategy performs well in closing the "productivity gap" in developing countries (FAO 2012a, 18). Moreover, investors have the potential to contribute to sustainable development if they foster knowledge and technology transfer to local stakeholders (Fuglie and Nin-Pratt 2012; FAO 2012a, 323). However, cases on improved local food security and the adoption of knowledge are not reported in the here reviewed studies.

Smallholder farmers often rely solely on ecosystem services with little means to complement these. This makes them sustainable in the use of natural resources but hinders social security. CF offers smallholders an enabling environment because investors facilitate the access to skills training and credit for inputs and machinery. This farm professionalisation at a basic level offers them higher land and labour productivity. Investors provide smallholders with an access to marketing farm commodities. The effect is that "households with animal or mechanical power tend to have better crop yields, more opportunities to pursue off-farm employment, and greater food security". (McIntyre et al. 2009, 152; Ashley 2009; Wegner 2012) This way, smallholders gain improved access to input intensification and basic access to progress factors.

3.1.4 Synthesis: distinct characteristics of productivity in LSLA and CF

In the previous sections the farm-size productivity and sustainability of smallholder farms under CF schemes and plantations of land investors have been analysed. Two findings are outstanding:

Crop preference is only one factor that drives the decision over LSLA or CF. There is a general notion that smallholder farming brings higher yields per hectare for all kinds of crops. However, under changing supply chain requirements there is a point that the cost of own plantation production is lower for some crops than the enforcement of quality standards at suppliers. The systematic comparison of farm-size productivity in LSLA and CF poses a challenge. From case studies, preferences in the choice of business model for certain crops are summarized in figure 4 (overlaps are highlighted). It can be assumed that crop preference is only one important determinant in the choice of a business model.

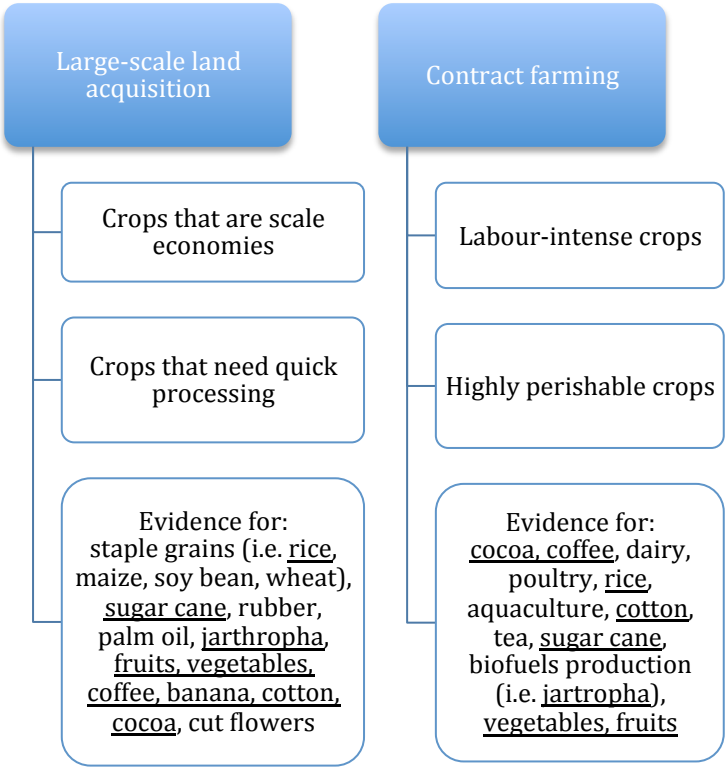

Figure 4: **Crops with high productivity under LSLA and CF (Source: own elaboration)**

Productivity growth offers mutual gains under CF but not under LSLA. The analysis of sustainability in agricultural investments reveals that CF may offer more common ground for value sharing than LSLA: Industrial plantation farming which is fostered by LSLA investors is not environmentally friendly. As far as social benefits can be established in this section, LSLA does potentially offer long-term gains from knowledge and technology transfers to the local farming community in host countries (for a more comprehensive discussion, see sections livelihood and risk). CF relies on smallholder farming practices that are approved to be sustainable. As far as social benefits can be established in this section, CF offers smallholder families an enabling environment to professionalise their farming activities and improve livelihood security.

3.2 Livelihood

To consider livelihood in political decision-making is vital from a macroeconomic perspective. Particularly in primary agriculture, business and private life are inevitably linked. It is estimated that 90 per cent of farms worldwide are family run (McIntyre et al. 2009). On this micro-economic level, changes in the farming business directly affect household wellbeing. Investment in agricultural production is one of these activities that induce changes. UNCTAD assesses that they are a "disruption of traditional farming system and livelihood" (2009, 94).

Arguably, the facilitation of livelihood security impacts both ways. Investment projects that offer a maintenance or improvement in livelihood are more gainful for smallholders. At the same time, the livelihood situation of local farming communities does impact on the success of investment projects. Agribusinesses, therefore, have a strong rationale to consider local livelihoods in corporate decision-making. The facilitation of local wellbeing potentially safes transaction costs and production costs for investors.

LSLA investors have an interest in building local reputation and acceptance for plantations. It is recognised that smallholders are not part of the plantation economy fostered by LSLA investors. Provided that governments dispossess smallholders to make way for investors' plantations, there is a point to build reputation and prevent hostility in local communities. Moreover, the labour force on plantations largely consists of locals. With regard to human resource planning it is critical to understand their livelihood situation.

In CF, the livelihood situation of smallholders has direct implications for the productivity. It is argued that farmers who see their basic needs fulfilled will be more reliable partners with fewer problems to solve at the side. Mutual gains are expected from the facilitation of long-term trust and commitment.

To assess how local living conditions matter for the success of investment projects a framework is provided. It is applied to smallholders in low-income countries. The analysis helps to pin point the livelihood situation of smallholders in the presence of agricultural investments. Finally, a typology gives evidence for the relevance to consider livelihood in corporate investment strategies.

3.2.1 Concept and indicator development

Chambers and Conway (1992) define livelihood as having "the capabilities, assets (including both material and social resources) and activities for a means of living". A variety of sustainable livelihood frameworks are developed on the basis of this definition. Scoones developed one of the most frequently used frameworks in 1998 that also served as a model for DFID's Sustainable Livelihoods Framework (see figure 5).

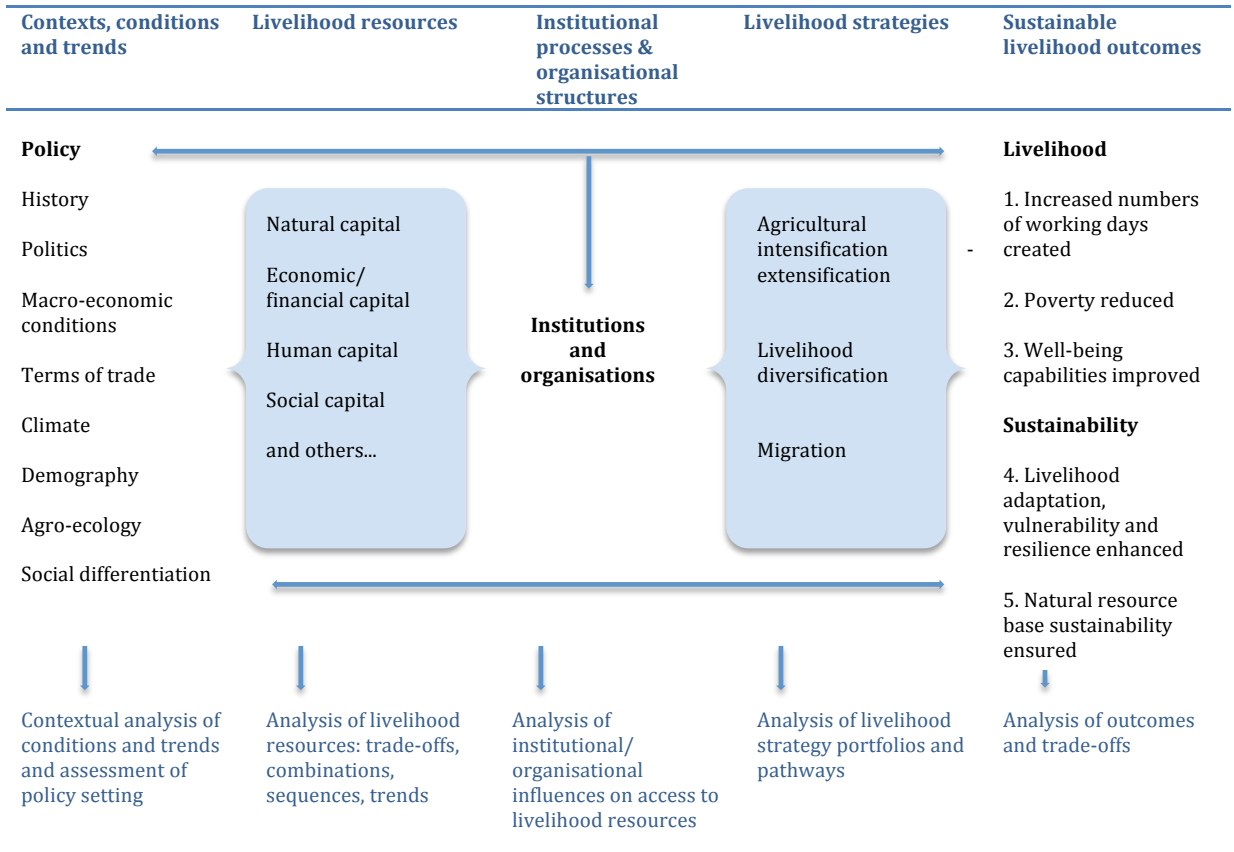

Figure 5: **Sustainable Livelihood Framework as developed by Scoones, 1998 (Solesbury 2003)**

By considering not only tangible indicators but also intangibles, Scoones aims at drawing a comprehensive picture of livelihood situations. The first determinant is the *context* in which the population lives (history, politics, trade, climate etc.). The second determinant is the *livelihood resources* (social, natural, financial, human capital etc.) of farmers. The ability to form livelihoods, thirdly, depends on *institutions and organisations* that are prevailing on local, regional, national and international level. The combination of these determinants indicates how people shape their livelihood strategy. In the context of smallholder communities, Scoones expects *three livelihood strategies* that occur alone or in combination: agricultural intensification/ extensification, livelihood diversification and migration. Moreover, Scoones provides *outcome* indicators to measure improvement and sustainability in livelihood.

The typology in table 3 indicates the impact of LSLA and CF on smallholders' livelihoods. It is inferred how a change in livelihoods affects investors under each business model. To ease handling, the typology does only account for livelihood resources. Political and institutional influences, such as power structures of local elites or the ability to enforce legislation by the government, are not considered because of high regional diversity.

Table 3: **Impact of LSLA and CF on the livelihood resources of local smallholders**

Livelihood resources [1-6]	Impact of large-scale land acquisition *	Impact of contract farming *
NATURAL CAPITAL		
Land access for locals	negative: displacement/restriction	positive: access maintained
Land productivity [1 4]	negative: exploitation	controversial: some exploitation through intensification expected
Water nutrient content [1 3]	negative: depletion	controversial: degree of irrigation development not fully assessed
Fresh water access for locals [1]	negative: restriction	positive: access maintained
Swamps and marshland preservation [1]	negative: drainage	positive: maintained
Forest conservation [1]	negative: clearing/burning	positive: maintained
Crop diversity [1]	negative: mono cropping	controversial
Climate change R&D [4]	positive: mitigation and adaption on plantations	controversial: no long-term interest of investors but some support
Environmental impact standards [4]	controversial: global standards vs. disregard	no data on application
FINANCIAL & ECONOMIC CAPITAL		
Ownership of land 1 [2]	negative: dispossession	positive: ownership maintained
Compensation for dispossession [1 4]	controversial	not applicable
Food sovereignty [1]	negative: undermining farming activity on traditional plots	positive: no limitation to cultivate only contract crops
Food self-sufficiency / constant access to food [1]	negative: undermining farming activity on traditional plots	positive: opportunity to cultivate subsistence crops
Capital accumulation [4]	not applicable	positive: loans for asset development
Employment creation [3]	positive: local staff	no data on hired staff
Ownership of business [1]	not applicable	positive
Access to market places [5]	not applicable	positive
Access to loans and financial services [2 4 5 6]	not applicable	positive
PRODUCED CAPITAL		
Infrastructure development [4 6]	controversial	positive in most cases
Sharing of production infrastructure (machinery, irrigation schemes…)	not applicable	positive: opportunity to sharing via cooperatives
Access to (quality) inputs [2 6]	not applicable	positive
Access to extension services [2]	not applicable	positive if cooperative membership
HUMAN CAPITAL		
Management practice [3]	not applicable	controversial
Labour standards [3]	controversial	negative: tendency to exploit family-run farms
Ability to shape livelihood resources [3]	negative: dispossession/ displacement	positive
Local research and	positive	positive if applied

development [4]		
Knowledge and technology transfer [4 5]	controversial / negative: no cases reported	positive: direct transfer to communities
Access to market information [1 3 4 6]	not applicable	negative: not through investors, maybe through cooperative
Marketing ability (i.e. handling, storage, transport) [2 6]	not applicable	negative: crop collection via middle man
Access to education/training [5]	negative: lacking human resource development	positive if applied, e.g through cooperatives
SOCIAL CAPITAL		
Tenure security [1 2]	not applicable	negative: no impact on tenure governance
Bargaining power in decisions-making [1 6]	negative: no consultation	positive
Gender-differentiated support [4 5]	not applicable	negative: observed that even though women run farms, men negotiate the contracts
Foundation of cooperatives [2 5 6]	not applicable	positive: often investor facilitation to reduce transaction cost
Independency to investor's arbitrariness [5]	not applicable	negative
Trust and intensive relationships [6]	not applicable	positive if fostered
Stability of partnership [3 6]	not applicable	positive if fostered

Sources: *own elaboration; [1]Cochrane 2011; [2]Gebre-al 2006; [3]UNCTAD 2011; [4]FAO 2012; [5]UNCTAD 2009; [6]Trienekens 2011

3.2.2 Local livelihoods in LSLA

The analysis reveals that LSLA generally does not contribute to the maintenance or improvement of smallholder livelihoods in host countries. Investments trigger changes in smallholder livelihoods that result in a chain of negative impacts. The most profound impact occurs from a change in land access and land ownership: Smallholders who live on land or use land that is acquired from foreign investors face dispossession and often displacement (Robertson and Pinstrup-Anderson 2010).

A related issue that is widely discussed in the literature regards land tenure rights in host countries of LSLA (e.g. Bellemare 2013; Borras et al. 2011; Rudloff 2012). It is recognised that smallholders are deprived of traditional land use because, in the wake

of promising capital sources, governments have started to nationalise land in order to lease or sell it to investors.

The consequence is a loss in economic, natural and human capital that affects smallholders' businesses and households. They loose farms, and with that the source of primary income or subsistence production. Moreover, alternative employment is scarce in rural areas (FAO 2012a). On a private level, smallholder families face the displacement of their houses. If smallholders live in close proximity to new plantations, it is reported that their access to basic ecosystem services is constrained: this concerns the access to sources of fresh water, forest fruits, firewood and grazing grounds for livestock (Grain 2012; The Oakland Institute 2011). In the long run, plantations leave locals with highly degraded soil, water and forests. Where limits to resource use or environmental impact assessments (EIA) of plantations and related infrastructure are part of lease/purchase contracts, they are often disregarded due to lacking enforcement by authorities. A point in case is Ethiopia. Analysed contracts by the Oakland Institute do not designate limitations for the amount of water abstracted from the Nile headwaters. According to Proclamation 200/2002 it is mandatory to conduct EIAs for all large-scale projects. In 2005, the Ethiopian Environmental Protection Authority chose 80 land investment projects to submit EIAs to the government. Neither has submitted an assessment since. (The Oakland Institute 2011)

Employment creation on newly established plantations serves as a compensation to some farmers. However, labour standards do rarely exist. In comparison to their previous life as farmers, employees do have no long-term assets to use as collateral in times of vulnerability.

In terms of human capital, international investors have the ability to shape host countries' agriculture. They bring new knowledge, technologies and infrastructure to host countries. For example, know-how on technologies to achieve higher yields contributes to food security of smallholders. Two factors that have the potential to

increase local benefits are a) research and development on local growth conditions, and b) adaptation to climate change. To ensure high productivity on their plantations, investors do work on both topics with certainty. However, the existence of knowledge transfer schemes is not mentioned in recent reports on LSLA (e.g. FAO 2012a; UNCTAD 2009).

Smallholders have little alternatives to build new livelihood strategies. Compensation by governments is often held out in prospect but seldom reaches dispossessed and displaced families due to the informality of previous land ownership (Anseeuw et al. 2012a). Moreover, Trienekens (2011, 52) asserts that developing country producers face limitations due to a "lack of enabling environment offering institutional and infrastructural support". To speak with Scoones' idea of three livelihood strategies, LSLA limits the opportunities of smallholders to either diversify incomes or intensify production on their own terms. Migration seems to be the only valid strategy in this respect.

3.2.3 Local livelihoods in CF

Contract farming does have a range of positive effects on smallholders' livelihood resources. Because the variety of CF schemes is great much depends on the specific contract. Moreover, the environmental impact of CF is rarely featured in case studies.

A distinct characteristic is that smallholders keep the ownership of land, be it by formal or informal tenure right (Vermeulen and Cotula 2010). Furthermore, CF offers smallholders a link to global markets. This new access to marketing places opens opportunities. Investors offer loans for the purchase of inputs or banks accept supply contracts as a guarantee to grant loans. This financial capital is a resource endowment that enables smallholders to invest in their production, i.e. to purchase input intensification, machinery, electricity, and to develop infrastructure. The professionalisation is needed to meet the requirements of investors.

In terms of maintaining natural capital, farmers can decide themselves to what degree production is intensified and resources are degraded. However, these decisions are linked to knowledge that smallholders rarely possess, such as on tipping points of soil fertility and irrigation sources. CF investors have no interest in facilitating costly research because their purpose is to create networks for flexible sourcing instead of developing fixed supply links. Research and development on climate change issues is not in the primary interest of investors, too. Accordingly, case studies do not report any related commitment of agribusiness companies (e.g. Barrett et al. 2010). -

Social capital is particularly important here because it has the potential to improve the long-term wellbeing of farmers. The membership in cooperatives increases the likelihood to find investors (Abebaw and Haile 2013; Gebre-al 2006). Cooperatives act as an intermediary and reduce transaction costs (e.g. communication) for investors and smallholders. One important service of cooperatives for farmers is the provision of up to date market information on prices. This enables farmers to form unions and claim appropriate prices for their commodities. Otherwise, the lack in "market intelligence" is a major constraint for farmers in negotiating contracts and price schemes with investors (Trienekens 2011).

In terms of personal livelihood strategies, CF offers smallholders opportunities to improve living standards by considering agricultural intensification as a strategy. Capital accumulation can enable smallholder families to envisage the diversification of livelihood resources. This is to build a long-term asset base in order to strengthen resilience to contract breaching by investors or lacking trust in long-term relationships. Migration seems not to be particularly relevant as long as CF brings more benefit to smallholders than their initial farming business.

3.2.4 Synthesis: Relevance of livelihood for investment projects

The analysis of livelihood indicators reveals that investment projects affect smallholders' personal wellbeing at various stages. It becomes evident that, for smallholders, the matter is about inclusiveness of business models. The indicators on land access and land ownership show that smallholders in LSLA are not only excluded from international markets but are excluded from farming at all. The lost access to land leaves them with significant constraints, i.e. restricted access to land and water, as well as the degradation of their natural resources. Smallholders in CF, on the contrary, do have opportunities to improve their livelihood, such as access to markets via investors and access to extension services through cooperatives.

Three points are distinct in illustrating the relevance of livelihood to successful investment projects:

- Investing in smallholders is asset management. In LSLA, partnering with local farmers aids the management of acquired land. LSLA investors are expected to have enormous cost for setting up and running plantations abroad. This is a reason to care for the land in order to not loose value over the long-term lease or ownership. One cost factor is research and development (R&D) use resources efficiently and maximise yields. Indigenous knowledge supports R&D and lowers transaction costs for investors. In CF, supporting local farmers is asset management of future sources of supply. The opportunity cost to suitable smallholders or cooperatives is enormous. The support of smallholders to professionalise farms is an investment in future partners. If farmers feel confident and trust investors, they will consider extend farming or take on employees.

- Human resource management in LSLA and CF increases productivity and reliability. To accommodate for human resource development in investment

projects is gainful because investors generally benefit from a productive labour force. Under poor working conditions plantation workers and smallholders are in "a vicious circle of poor health, reduced working capacity, low productivity and short life expectancy" (McIntyre et al. 2009, 2). To ensure motivation, commitment and reliability in the work force there is a clear point for human resource development. One way to support healthy and motivated staff in LSLA and farmers in CF is the facilitation of local food security and asset accumulation. Another way is to offer skills training to locals. Studies suggest that education and rural infrastructure are the most effective ways to increase wellbeing and reduce poverty (FAO 2012a). Other possibilities for investors in LSLA include the development of social and financial capital, i.e. through knowledge and technology transfer to communities or fair wages to enable employees to support their families. In CF, building social capital and facilitating linkages with other farmers is efficient to build long-term ties. To develop financial capital, such as offering loans, prevents breaching of contract.

- Building good reputation at a local scale builds commitment. Supporting the community, for example by providing access to natural resources or infrastructure reduces the threat of social unrest in rural communities. This is particularly valid for communities who are disadvantaged by 'foreign' plantations. Cochrane (2011) reports cases of civil unrest because ex-smallholders have been facing restricted access to resources and were vulnerable to fall into poverty and hunger. Eventually, there may be a point to invest in the food security of communities because there are examples where governments imposed export restrictions as a panic reaction in order to keep commodities in the country in times of shortages (Evans 2011; Rudloff 2012, 16; UNCTAD 2009, 187). To build resilience in the labour force, i.e. through fair wages or health care, has ripple effects in the

communities. This may soften hardship and prevent governments from imposing trade barriers.

3.3 Risk

The decision on investment projects includes a number of unknowns for all involved stakeholders: Investors face challenges related to the investment environment in developing countries because they lack experiences with different farm sizes and crop types. Smallholders, on the other side, face challenges related to their role in global markets. They have limited access to market information and limited power to bargain contracts with international investors. While financial up-front investments and trust are needed, return on capital is unclear. Therefore, risks and uncertainties are identified to have a critical impact on decision-making in agricultural investments (Bezabih 2009, Vermeulen and Cotula 2010). In developing a framework to appraise risk, the World Bank summarises the timeliness of the parameter risk: "Given the pervasiveness of risks and massive structural changes in global and national agri-food systems, farmers, agribusiness firms, and governments face new challenges in the design of risk management strategies" (Jaffee et al. 2010, 3).

In the following, a concept of risk is provided. A set of dimensions and indicators is developed to show how risk affects smallholders' and investors' decisions in investment projects. The collected data is compiled in a typology and analysed with regard to its relevance for smallholders and investors in LSLA and CF. The typology serves as a basis for comparing each group's exposure to risk.

3.3.1 Concept and indicator development

To aid decision-making, business administration offers frameworks to include risk and uncertainty in the cost benefit analysis of projects. Risk is defined as the measurable randomness of a change. The assessment of risk requires recorded experiences with unfavourable changes. To predict the (financial) influence of risk parameters on profitability, a probability distribution can be applied. (Fofana 2012, Panda et al. 2012) In practice, risk is often equated with uncertainty. This is formally incorrect because, in contrast to risk, uncertainty is not quantifiable. For example, the impact of political instability or climate change on project profitability cannot be measured. In the literature on agricultural investments this distinction is rarely made because data and experiences vary according to location and commodity. Therefore, in the following analysis the term risk refers to both risk and uncertainty in agricultural investments.

Types of risks	Risk consequences
Natural: risk of damage through wind, storms, floods, drought etc.	Property damage Business interruption Personal liability
Resources: risks associated with diminishing natural resources which influence profitability of business	Soil erosion Salienation Bush encroachment Loss of water quality and quantity Persistent droughts
Production: risks which influence production processes and profitability	Diseases Availability of labour Availability of inputs Climatic conditions Mechanical breakdowns Technology
Market risks: risks of price and volume fluctuations	Price decreases Produce quality Market access Exchange rate fluctuations Consumer preference Input costs increases
Finance: risks influencing the financial performance of a farming entity	Insufficient financial information Insufficient cash flow Interest rates fluctuations Availability of credit Debt structure
Strategy: risks which influence long-term profitability	Change in government's policy Change in economic markets Change in technology Regulatory requirements
Human resource: risks in human resource capacity on the farm	Shortage to human resources Ineffective management Shortage to key staff Staff not motivated
Social: risks influenced by the business environment	Market reputation risk Loss in production due to bad relations Loss to grow the business Food safety issues
Business relations: risks influenced by business relations	Legal risks Break in supply chain Trade disputes

Figure 6: **Risks related to agricultural investments as presented by ABSA at the World Bank expert meeting on managing financing risk in agriculture (ABSA 2009)**

To capture the various perspectives on risk, a comprehensive assessment draws on several types of sources: case studies and reports from development agencies (e.g. FAO 2012a; Panda et al. 2012; Barrett et al. 2010), governance analyses (e.g. Rudloff 2012) as well as economic analyses (e.g. ABSA 2009; Jaffee et al. 2010; UNCTAD 2011). In figure 6, the South African Bank ABSA illustrates that the types of risk in agricultural investments are

manifold. Accordingly, farmers and investors face natural risk, resource risk, production risk, market risk, financial risk, strategic risk, human resource risk, social risk and business relations risk; with all having consequences along the value chain (ABSA 2009). Risk sharing, therefore, is expected to have high priority in the contract negotiations between investors and targeted governments (in LSLA) or farmers (in CF).

In the following, a multidimensional risk analysis is conducted for investors and smallholders in LSLA and CF and depicted in table 4. The dimensions of risk are deduced from the World Bank paper "Rapid Agricultural Supply Chain Risk Assessment: A Conceptual Framework" (Jaffee et al. 2010), as well as from frameworks provided by Panda et al. (2012) and ABSA (2009). The risk indicators are collected from case studies that assess LSLA and CF from the perspectives of agribusinesses or smallholders.

Table 4: **Risk impact on investors and smallholders in agricultural investments**

Risk	Smallholder families in LSLA	Investors in LSLA	Smallholders in CF	Investors in CF
Political instability / social unrest 5		X	X	X
Changes in policies 2 7		X	X	X
Contract mode and attributes			X	
Negotiation power 4	X		X	
Unclear tenure rights 1, 3	X	X	X	
Food export restrictions 1		X	X	
Appropriate land prices 1		X		
Input costs (fuel, fertilizer…) 4 7			X	
Poor electricity supply 4		X	X	
Poor irrigation infrastructure 4 6		X	X	
Long payback period 1 6		X	X	X
Availability of labour 7		X		
Availability of inputs 7		X	X	
Mechanical breakdowns 7			X	
Lack in technical knowledge 4			X	
Pests and diseases in crops 1 4		X	X	
Post-harvest losses (lack in storage facilities, perishability etc) 4			X	
Choice of pricing system 1 4			X	
Coordination among farmers 4 6			X	X

Non-compliance by farmer 1 6				X
No full understanding of contract implication 6			X	
Insufficient supply (quality, quantity) 1 6		X		X
Market saturation / change in consumer preference 6 7		X	X	X
Non-compliance by firm 1 6			X	
Finding alternative buyer / seller			X	X
Land fragmentation 4			X	X
Lack of investment capital 4	X		X	
Lack in individual reputation, social connections 6	X		X	
Reduced food availability 3 5	X			
Exposure to poverty	X		X	
Lack of access to education/training	X		X	
Unemployment 3 1	X			
Dispossession 3	X			
Displacement 3	X			
Seasonality / weather 4 1 8		X	X	
Natural disasters (drought, flood, storm…) 4 8		X	X	X
Climate Change 4 8	X	X	X	X
Degradation of natural resources 7 8	X	X	X	X
Ineffective management / shortage in key staff 7		X	X	X
Staff not motivated 7		X		X
Loss in production due to bad business relations 7				X
Break in supply chain 7				X
Trade disputes 7		X		X
Market reputation 1 7		X		X
Loss to grow the business 7			X	X
Law risks 2 7		X		X

Sources: *own elaboration; [1]Vermeulen and Cotula 2010, pp. 1-49; [2] UNCTAD 2011; [3] FAO 2012; [4]Panda et al. 2012; [5] Rudloff 2012; [6] Barrett et al. 2010; [7] ABSA 2009; [8] Jaffee et al. 2010

3.3.2 Risk for smallholders in LSLA

Smallholders who are excluded from the value chain in large-scale land transactions face two types of risk:

- risk related to negative socio-economic implications of exclusion, and
- risk related to environmental impacts.

Socio-economic risks are primarily caused by the dispossession and displacement of smallholders to the benefit of investors' plantations. For smallholders this is a loss of livelihood because they loose employment and local networks that used to step in for them in times of distress. Developing new livelihood strategies in rural areas leaves former smallholder families exposed to risks, such as food insecurity. Some smallholders are offered jobs at the large plantations. This offers an alternative source of income but employees often suffer from wages below subsistence.

Environmental impacts do affect the dispossessed even though they are not part of the farming community (anymore). In the long run they suffer from the degradation of natural resources due to agricultural intensification.

3.3.3 Risk for investors in LSLA

The assessment of risk reveals that LSLA investors face four types of risk:

- risk related to their investment strategy,
- risk related to the initial capital invested in projects,
- risk related to the production, and
- risk related to environmental impacts.

Strategic risk is triggered by political insecurity in developing countries (von Witzke 2010). Such factors affect the security of production, processing and trade in the host country (Jaffee et al. 2010). A related issue that is widely discussed is that some of the

top targeted regions of investors have been recipients of emergency food aid recently (see section 3.4.2, livelihood synthesis). The question is whether host governments have a justification to apply export bans on food commodities if famine breaks out. Long-term impacts on investment projects can be expected from policy changes. As agricultural investments undergo controversial public and international discussion, the introduction of host country regulations is only a matter of time.

Investment risk comes from the adaptability of progressive technologies to host country conditions. The development of appropriate irrigation, electricity supply, and roads for large-scale plantation require upfront investment with unclear payback periods (Fofana 2012, Barrett et al. 2010). Critiques suggest that appropriate prices for agricultural land would induce more risk on payback and enforce a reconsideration of alternative investment models (Vermeulen and Cotula 2010).

Production risk is induced by infrastructure breakdowns. The timeliness of input like seeds, water and electricity are critical to the production process (Panda et al. 2010). If inputs are shipped in from abroad to remote farming areas there is considerable risk of delay. The management of plantations requires professional and experienced personnel who are able to operate complex processes and react appropriately to technical breakdowns or crop diseases (Jaffee et al. 2010). Investors often hire highly skilled foreigners to do these jobs. This lowers production risk but requires the development of high standard social infrastructure. As the investor Citadel Capital reveals, on-farm health care professionals are additional cost factors. A manager states that infrastructure challenges, weather related uncertainty and strategic and production risks "result in a direct cost of production of around $550 an acre, compared to around $300 an acre in developed countries". (Green, 2012)

Risk exposure due to environmental impacts, be it weather-related or natural disasters, is inevitable for all farmers. Weather-related risks like droughts or excess rainfall impact on the quantity and quality of yields. Losses in harvests have ripple effects

throughout the supply chain. However, investors usually have the capacity and financial means to soften weather-related risks by introducing resistant seeds or increasing irrigation. The degradation of resources bears risks for the long-term productivity and profitability of the purchased/leased land.

3.3.4 Risk for investors in CF

Investors who purchase agricultural products from smallholding contractors face two types of risk:

- risk related to the marketing of products, and
- risk related to business relations along the supply chain.

Marketing risks largely refer to uncertainties in the supply and demand of products (Jaffee et al. 2010). Factors that determine the functioning of the food supply chain are the quality or quantity of commodities as well as contract breaching by farmers (Barrett et al. 2010). Lacking contract compliance is particularly prevalent where a) contracts are only oral and b) where spot market prices exceed pre-agreed prices for commodities. Farmers may then decide to side sell their produce to higher-bidding buyers. (Vermeulen and Cotula 2010) Another risk factor is the coordination among farmers. Farmers who are not organised are more difficult to manage; transaction costs for investors are higher. The support of local cooperatives reduces marketing risks because these institutions facilitate the supply of inputs to contracting farmers, the enforcement of food safety standards, and serve as an intermediary in the collection of products (ibid.). Demand-related risks refer to market saturation or changing consumer preferences (Absa 2009, Barrett et al. 2010). The consequence is that investors themselves breach contract to find alternative suppliers who are able to satisfy the changing market demand.

Risk in business relations is induced by uncommitted and unreliable smallholders. This is, for example, if investors only pay minimum premiums to farmers and rely on the fact that smallholders mobilise further family members to support farming and harvesting (Hayami 2010). Other risks are ineffective farm management and shortage in high-skilled staff. A major upstream risk is the market reputation of the exporter among retailers and consumers. Trust in the brand is important and can be undermined by the perception of poor business practices or corrupt value chain governance (Vermeulen and Cotula 2010, Jaffee 2010). A general limitation with CF is that, once good working relationships are established, smallholders only have little opportunity to expand their business due to small land size and little management capacity. An option that is widely used, thus, is to contract with neighbours of successful smallholders. The opportunity to share knowledge, inputs and infrastructure between farmers reduces transaction costs for investors.

3.3.5 Risk for smallholders in CF

Smallholders who contract with agribusinesses in order to sell their surpluses or to introduce tradable crops face six types of risks:

- risk related to their business strategy,
- risk related to the initial capital invested,
- risk related to the production,
- risk related to the marketing of products,
- risk related to negative socio-economic implications of contracting, and
- risk related to environmental impacts.

Strategic risk applies because smallholders base their decisions rather on their perception of risk than on information. Panda et al. (2012) assess that decision-making of vegetable farmers in India bases on experience and intuition. Due to limited access to market information and limited negotiation power, they face two dilemmas: a) to either

accept oral contracts and trust fair conditions, or insist on written contracts with definite instructions; and b) to decide on their preferences for contract attributes that are to be negotiated with the investor. Moreover, smallholders are tied to the strategic decisions of investors. If investors decide to shift the supply chain to other regions because of political instability or new policies that affect their project, smallholders are left behind with surplus harvests and high opportunity cost.

Investment and production risks are interdependent. Smallholders need capital to attract investors in the first place. Financial capital is spent on a smooth flow of inputs, which is developing irrigation infrastructure, purchasing fuels to run the machinery, getting access to fertilizers etc. Long payback periods are a major constraint (Barrett et al. 2010) if smallholder households have a sufficient asset base to cover the risk. In the production period the timeliness of input supplies is critical. As smallholders largely depend on external supplies, time is a significant risk factor. So are breakdowns and diseases in crops. Farmers build cooperatives to mitigate these risks because associations often provide access to extension services and knowledge (Vermeulen and Cotula 2010). Particularly in the farming of perishable products, post-harvest losses are perceived as one of the most threatening risks by smallholders (Panda et al. 2010). They lack storage facilities to keep the products in a cold environment if the middleman does not pick-up products within hours after the harvest.

Marketing risk for smallholders relates to contract compliance of investors and the payment system. Smallholders have little means to hold investors responsible if they breach contract. The opportunities to sell their products on local markets are rare. Case studies for Ghana reveal that (partly due to perishability) products were only sold at about half of the market price, report Barrett et al. (2010, 29). Another market-related risk is the choice of an appropriate pricing system (Panda et al. 2012). Depending on the farmed product and market situation it is either beneficial for farmers to negotiate a fixed price as part of the contract or sell their produce at spot market prices. While

fixed prices offer safe returns on investment and shift some market risk to the investor, spot market prices leave smallholders exposed to market competition (Vermeulen and Cotula 2010). An issue is that smallholders often do not know about the implications of such contract attributes and tend to take uninformed decisions.

Socioeconomic risks particularly affect to the majority of smallholders whose farms are family businesses. Uncertainty about the ability to pay back loans, food shortages due to lost harvests and minimum wages due to high competition are some of the problems that feature highly in farmers' livelihoods. The exacerbated exposure to risk leaves smallholder families vulnerable to fall into poverty. Panda et al. (2010) assess that the perception of marketing risk and socio-economic risk are main determinants in the overall risk perception of farmers. Assets such as livestock, machinery and social networks help to ensure long-term resilience to natural disasters or business shocks (FAO 2012a).

The risk exposure due to environmental impacts is particularly severe for smallholders. They have difficulties to cope with weather-related risks like droughts or excess rainfall because their access to modified seeds is limited, unless the investors provide them. Decreasing productivity due to the degradation of resources has socioeconomic impacts. Climate change poses uncertainty and features high in risk perception surveys (e.g. in Panda et al. 2010) because adaptation to the changing environment requires capacities that are limited so far.

3.3.6 Synthesis: Risk sharing between investors and locals in CF and LSLA

The previous analysis of risk in LSLA and CF reflects what the International Food and Agribusiness Association (IFAMA) has established for global value chains: Accordingly, risk leads to "poor physical infrastructures…, weak institutional infrastructure…, unbalanced trade relationships…, and unfavourable social and political conditions" (Trienekens 2011, 65).

While investors in both business models face fundamentally different challenges, CF smallholders and LSLA investors are confronted with a similar set of problems. The following findings are worth noting:

- The investors in CF shift a bulk of risks to smallholders. Support for up-front investments is usually granted. Production risks stay with the farmer. If harvests fail due to adverse weather events or pests or diseases, farmers are left with their liabilities.
- LSLA investors internalise up-front investments and production cost with all related risk of unclear payback and disrupted farming seasons. Land lease or purchase comes with transaction costs to finding, negotiating and managing land, soil and water in the long run.
- CF investors face high transaction costs to build decentralised supply networks for their commodities. They have high risk to smoothly market their purchase due to problems in contract compliance (quality standards, side-selling) and traceability requirements in global value chains.
- For smallholders the matter is about inclusiveness in food value chains. Smallholder families in LSLA are excluded from farming at all. Smallholders in CF have access to markets via investors. This trading partnership, however, leaves them with risks that feature high on their livelihood situation.

From a political economy perspective, there is a clear point in favour of business models that are inclusive for smallholder participation. Low-income economies view rural development as critical. This increases the graveness of risk that dispossession implies for locals. Other than that, it seems that individual corporate preferences and individual management ability determine the weight of single risk factors. The major trade-off takes place between high transaction cost in CF and high up-front investment and production cost in LSLA.

4 Conclusion

Which business model adds more value? At a global scale, value addition from agricultural investments is linked to the creation of food and energy security. The contribution of smallholders to global markets is inferable from LSLA and CF characteristics. In LSLA, investors intensify production on the acquired land and utilise their links to international markets to efficiently process and distribute products. Smallholders are left behind with at best a regular employment at the plantation of investors. CF, on the contrary, does facilitate the professionalisation of small-scale agriculture. This aids smallholders to closing the yield gap in their countries. Investors constitute a temporary link to global markets. Even though market access is not stable, the business relationship offers improvement and allows for subsistence production at the side.

At a local scale, value addition comes form improved productivity and food security creation. With regard to these factors, CF does add more value than LSLA. CF schemes do not touch on traditional land use rights and offer opportunities to improve livelihood via professionalised farming activity. Farmers do have a voice in the negotiation of supply agreements with investors, though bargaining usually bases on individual perceptions. It is assessed that smallholders profit from the membership in cooperatives because these institutions facilitate access to market information. This is an advantage in bargaining commodity prices (and thereby wages) with investors. A drawback of CF is that smallholders face disproportionally many risks in comparison to investors. Outstanding are the risks to fall in-debt because of late payback of up-front investments or distortions in the production process. Moreover, it is revealed that only the top two to ten per cent of smallholders have access to CF. Investors prefer financially strong smallholders with larger farming plots.

What are the incentives for fair value sharing between investors and smallholders? Some interdependencies between investors and smallholders have been established in the previous analyses. They constitute viable incentives for investors to share value with locals. Critical outcomes are depicted in figure 7. The outcomes indicate that local participation and commitment to farming activity does have the potential to increase gains and reduce costs for investors.

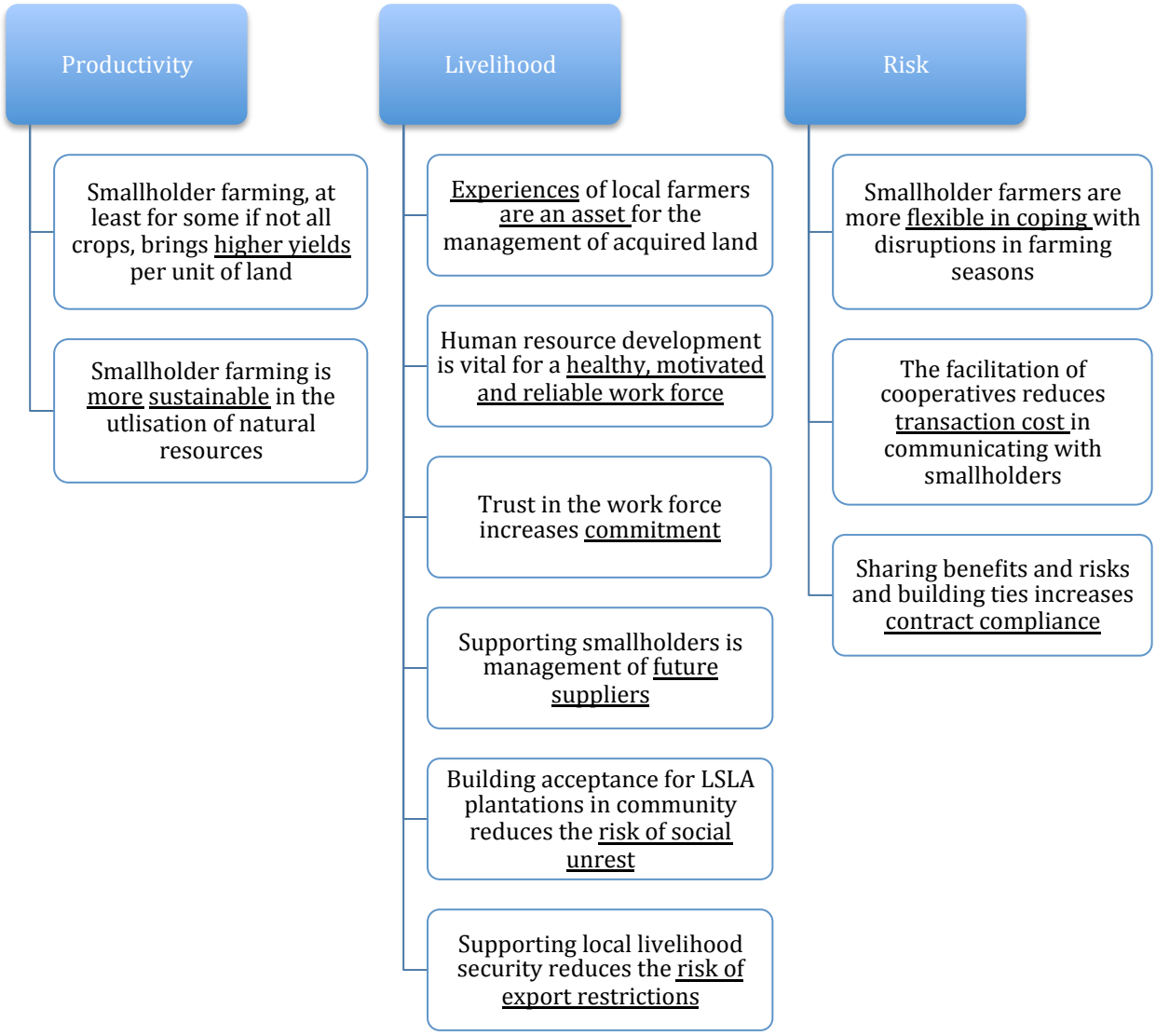

Figure 7: **Incentives for fair value sharing between investors and smallholders in investment projects (own elaboration)**

At an aggregate level it becomes evident that smallholders may suffer more from all kinds of risk than investors because issues always affect their livelihood. To invest in the livelihood security of smallholders offers increased resilience for investment projects. Higher profitability may be achieved with appropriate crop-farm size allocation. The reconsideration of what crops can be grown most efficient under small-scale or plantation farming brings financial and economic gains. The analysis of recent case studies suggests that there is an asymmetry in comparing crop productivity: Crops with quick processing requirements are produced better under LSLA plantations but crops that are highly perishable are better produced under CF. Arguably, there is a descriptive overlap in crop types that can be produced efficiently under both business models. This reported for crops such as rice, sugar cane, jarthropa, vegetables, cotton, coffee and banana. To increase social and environmental sustainability as well as financial profits, investors need to think over investment strategies. They can make a difference by sourcing these crops from CF production instead of own plantations.

Does CF offer a potential to replace LSLA? From a political economy perspective, CF seems to be the business model that performs better in terms of social and environmental responsiveness to local circumstances. In terms of business performance, smallholders have a direct access to natural resources, knowledge on local growth conditions and comparative advantages in some productivity factors. Plantations of transnational companies do have a disadvantage in this regard. However, they are more efficient in some respects and can respond to increasing food safety and traceability standards. It is remarkable that LSLA investors operate detached from local societies and are expected to mainly serve international market places. In conclusion it may be possible to replace LSLA for some crops that CF produces more efficiently. From a social and environmental perspective it even is advisable to replace LSLA with inclusive business models.

The future academic discourse has to rethink investment strategies in agriculture and develop alternatives that combine positive aspects of business models such as LSLA and CF. The outcomes of this thesis reveal that fair value sharing in agricultural investments means that:

- investors and local smallholder communities share profits from productivity growth adequate to their amount of work and effort,
- neither is at risk of loosing their livelihood due to adverse effects of contract attributes, and
- neither carries a disproportionately high level of production risk because farming is at the bottom of the value chain and is vital to all subsequent stages.

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